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NEBRASKA National Forest



U. S. DEPARTMENT OF AGRICULTURE

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Issued September 1952 //

U. S. DEPARTMENT OF AGRICULTURE

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Ferdinand Naber.....Mechanic

Carl E. Smith.....Forestry Technician

Ralph H. Schmaljohn.....Foreman

Clarence R. Schwartz.....Forestry Technician

NEBRASKA FARM FORESTRY COMMITTEE WHO SPONSORED GOLDEN ANNIVERSARY OBSERVANCE OF THE NEBRASKA NATIONAL FOREST

September 10 - 14, 1952

Earl G. Maxwell, Lincoln, Nebr.....Extension Forester
State of Nebraska

Lloyd Moffet, Fremont, Nebr.....Association of Nebraska
Nurserymen

Jim Ager, Lincoln, Nebr.....Game, Reforestation and
Parks Commission
State of Nebraska

Dr. Raymond J. Pool, Lincoln, Nebr.....Professor Emeritus
University of Nebraska

Sidney Burton, Lincoln, Nebr.....Soil Conservation Service

Don Lubberts, Waterloo, Nebr.....Forester — Farmer

Fred Holcher, Ogallala, Nebr.....Farmer

J. K. Brandeberry, Lincoln, Nebr.....U. S. Forest Service
Missouri River Basin
Field Representative

Dr. H. C. Zellers, Lincoln, Nebr.....Nebraska Council of
Sportsmen's Clubs

Acknowledgment is made to Fred R. Johnson and Jay Higgins, former Forest Supervisors on the Nebraska National Forest, now retired, for preparation of this pamphlet.

Photographs by Jay Higgins
Issued September, 1952

NEBRASKA NATIONAL FOREST

1902 — 1952

EARLY FOREST HISTORY

The Nebraska National Forest was established by proclamation of President Theodore Roosevelt on April 16, 1902, mainly as a result of the long-sustained interest in tree planting and conservation on the part of Dr. Charles E. Bessey, for many years professor of botany at the University of Nebraska. Dr. Bessey came to the University in 1885. His first great interest was in Nebraska grasses. Next he stressed the planting of trees in the sandhills, which occupy about 20,000 square miles, or approximately one-fourth of the total area of the state of Nebraska.

Dr. Bessey presented this idea to the Nebraska Horticulture Society which accepted his suggestions and supported him in his efforts to interest the Federal Government in the planting of trees in the sandhills. Dr. Bessey based his theory on the feasibility of such tree planting project on the grounds that this region in times past had supported a growth of trees, as evidenced by the presence of eastern red cedar and ponderosa pine along river valleys and in outcroppings of sandstone in bluffs throughout the sandhills.

He succeeded in arousing the interest of Dr. Bernard E. Fernow, Chief of the Division of Forestry of the U. S. Department of Agriculture. Dr. Fernow offered to supply trees for experimental planting. Accordingly, in the spring of 1891, Dr. Bessey arranged to have these trees planted on the Bruner Brothers' ranch in Holt County, four miles west of Swan Lake. Jack, Scotch and Austrian pine seedlings were planted. A prairie fire destroyed a part of the grove, but that portion which survived and grew remarkably well, served for years as an example of the results that can be obtained from the planting of coniferous trees in the sandhills of Nebraska.

Reconnaissance Survey of Sand Hills

Dr. Bessey kept the project before the Division of Forestry until he finally succeeded in interesting William L. Hall, Chief of the Section of Tree Planting of the Division of Forestry, U. S. Department of Agriculture. In the spring of 1901, a party was organized by the Division of Forestry to make a reconnaissance survey of the sandhill region for timber-growing purposes, and to make recommendations for such a project.

This party was unique in a number of respects. Some of its members had been working under the leadership and inspiration of that tireless and energetic forestry and conservation leader, Gifford Pinchot. All were young and enthusiastic in support of the new movement, which was soon to receive the blessing of President Theodore Roosevelt.



The above scene shows the planted hillside immediately south of Bessey Nursery as it appeared in 1912.



The same area as that shown above as it appeared in 1952. The radio aerial tower shown in this picture is on the prominent hill on the right center skyline of the upper picture.



Typical sandhill blowout as seen from the northwest side. The top of the hill has blown away by the prevailing northwest winds. Above photograph was taken in 1912.



The area surrounding the blowout shown in the top photograph was planted with trees in 1919. These have grown so high as to make it impossible to retake the scene from the same spot. This picture was taken in 1952 from a point near the east side of the 1912 picture. The protection of the planted trees has checked the wind movement and the original blowout now has revegetated.

Mr. Hall personally conducted the party in the study of tree growth in the eastern part of Nebraska, and was helped and encouraged by members of the State Horticulture Society.

On July 1, 1901, the reconnaissance party was organized at Kearney, Nebraska, and outfitted to cover the sandhill region in a very thorough manner. Royal S. Kellogg, of Kansas, was in charge. Mr. Kellogg, now living at Bradenton, Florida, has been prominent in the timber and news print industry for many years. Chas. A. Scott, a fruit grower now living at Alamo, Texas, was active in forestry for many years. He was the first forest supervisor of the Nebraska National Forest, was an educator (Iowa State College, Ames), state forester and horticulturist of Kansas, state extension forester of Colorado, director of the Federal Shelterbelt Project for the state of Kansas, and commercial nurseryman.

The other members of the party, now deceased, included L. C. Miller, of Oklahoma; F. G. Miller, a prominent forestry educator, (Universities of Nebraska, Washington and Idaho); Hugh P. Baker, one-time Dean of the New York State School of Forestry at Syracuse and later President of the University of Massachusetts; John H. Hatton, for many years active in range and wildlife management in the U. S. Forest Service; E. P. Bailey, who was active in educational work.

The survey included the sandhills from Kearney to North Platte (north of the Platte River); thence along the North Platte River to the Wyoming line; thence north to Pine Ridge; thence east through the Pine Ridge region to Rushville; thence south to the C. B. & Q. Railroad at Ashby; thence east along the C. B. & Q. to Broken Bow.

The Forest Proclaimed

As a result of the study, the members of the party recommended the setting aside of the two present divisions of the Nebraska National Forest. President Theodore Roosevelt issued the proclamation, on April 16, 1902, establishing the Dismal River Forest Reserve located in Thomas and Blaine Counties, and the Niobrara Forest Reserve in Cherry County. The name of Niobrara was retained for that Division, but later the Dismal River was renamed the Bessey Division in honor of Dr. Charles E. Bessey. The net area of the two divisions at present is 206,028 acres. Another Division, the North Platte, located south of Hyannis, Nebraska, was established in 1906. It was abolished in 1913 and opened to homestead entry.

The purpose of establishing the two small forest reserves was to determine the feasibility of growing trees in the sandhills of Nebraska, and to supply forest products for the people of the sandhills and adjacent areas. Also, the thought was that the knowledge so gained, as to species and methods, would then be available for citizens of western Nebraska and the adjacent plains states.

It was a pioneer project for rugged individualists. There were no precedents or practices to follow. It was necessary to go into the area, break up the prairie soil, and figure out methods of raising coniferous trees, which, it was thought, could be planted in the sandhills without cultivation and could furnish forest products more quickly and of a better quality than the broadleaf varieties.

The brunt of this work devolved upon Charles A. Scott who was in charge of nursery and planting work from the establishment of the Forest in 1902 through 1907, and his assistant William H. Mast, who continued with the project from 1902 until 1911. Mr. Mast has been a successful commercial nurseryman in Davenport, Iowa, for many years and still resides there. Discouragements were many, such as germination of beautiful beds of pine seedlings, only to have them wilt almost completely, similar to the wilting of tomato plants that occasionally occurs after germination.

A young Nebraska University graduate and scientist, Dr. Carl Hartley of the Bureau of Plant Industry was assigned to the problems. He developed a treatment of seedbeds with a dilute solution of sulphuric acid, which largely eliminated the "damping off" fungi. This and other treatments developed by Dr. Hartley now have world-wide use.

Many species of coniferous trees were tried out in the nursery and in plantations. Another young University of Nebraska graduate and scientist — Carlos G. Bates — conducted a lot of the basic research that helped to solve the problems outlined under the chapter on plantations.

In fact, the Nebraska Forest Project has received the support and assistance of many University of Nebraska officials since the days when Dr. Charles E. Bessey was instrumental in its establishment. Dr. George E. Condra, Chairman of Conservation and Survey Division for many years, gave the benefit of his experience in conservation work to those in charge of the project. Dr. R. J. Pool, who was Dr. Bessey's successor in the Botany Department, installed range quadrats and plots. Extension Director W. H. Brokaw and the several Chancellors of the University during this period helped in many ways.

The country was sparsely settled but more people came into western Nebraska soon after the passage of the Act of April 28, 1904, commonly known as the Kinkaid Act from its author — Congressman Moses P. Kinkaid. This Act permitted the homesteader to file on not to exceed 640 acres within the area specified. Each section of land adjacent to the Forest was soon filed upon, and these settlers furnished the bulk of the labor used in the early day nursery and planting operations. The part-time work that these settlers were able to obtain on the Forest made it possible for many of them to "prove up" and receive patents for their homesteads.



Photo taken in 1903 showing original office building — located on the site of the present Forest headquarters.



Present headquarters building located on the same site as the frame structure shown above. The row of large elm trees on left appear as small seedlings in the 1903 photograph.

TREE PLANTING STARTED — HIGH LIGHTS

Species Tested.

Following the establishment of the Forest headquarters in 1902 and the development of the nursery area, the first trees were planted on the Forest in 1903. Approximately 70,000 jack pine seedlings were dug from the forests of Minnesota and planted on the hillside immediately south of the nursery. About 15 to 20 percent of these were alive three years later. Some of these original trees are approximately fifty feet high at this time. At the same time, 30,000 forest-pulled ponderosa pine seedlings, obtained from the Black Hills in South Dakota were also planted in the hills south of the Nursery. These trees failed entirely. This same fate was experienced by extensive broadcast sowings of seed of jack pine, ponderosa pine, eastern red cedar, and Colorado blue spruce.

The first planting of nursery-grown ponderosa pine occurred in 1904 and was partially successful in spite of the difficult sites selected for this planting and the small sizes of the trees. One-year old ponderosa pine seedlings planted in 1905 on north slopes succeeded, but they had a difficult time in becoming established.

By 1906, jack pine and ponderosa pine had proved their worth. While no other species had been so thoroughly tested, Douglas fir, blue spruce, and other trees from the upper slopes of the Rocky Mountains had been tried in the nursery with but minor success in growing them from seed or their successful survival when planted in the field. In subsequent years, other conifers have been tested with varying results.

Scotch pine was first planted in 1907. The plantation was on a gentle north slope and was but partially successful. The persistence of some of the surviving trees which were of imported stock gave some promise of the suitability of this species for sandhill planting. Especially good success resulted in 1910 when 24 acres were planted. About 75% survival was obtained in certain plantations but survival on the whole has not been high enough to warrant further planting of Scotch pine.

Austrian pine was first tried in 1909, using seedlings obtained in the east. Numerous later plantings have been made. The tree has some very desirable characteristics in its favor and, in a few plantations, has shown very good survival and growth. It has not, however, consistently shown the qualities that fit it for sandhill planting and is no longer being planted.

Norway pine, a native of the sandy soils of the Lake States, was tried in a small way in 1909, more extensively in 1910 and subsequent years. The survival was exceptionally good in the 1910 plantation. Tip-moth attacks in its earlier years were very severe



Three people with the Nebraska planting machine can plant up to 2,000 trees per hour at a cost of less than $\frac{1}{2}$ cent per tree.



A 36 year old plantation of Jack pine that will produce valuable wood products.

and for a long while the height of the trees remained almost stationary. Later, however, the tip-moth attacks became less severe and with this handicap removed, the 1910 plantation has developed into one of the most attractive in general appearance and form, and today is making excellent height growth.

The drought years of the 1930's proved to be a critical period in determining the adaptability of the various coniferous species which had been used up to that time for planting on the Forest. Jack pine in particular developed a serious weakness in that heavy mortality occurred in many of the older fully-established plantations due to severe drought. Jack pine has a shallow surface root system, which in dry periods is unable to obtain the requisite supply of moisture for the trees' minimum needs. The serious drought losses in Jack pine, together with other factors, have been largely the basis for discontinuing the use of this species in the forest planting plan.

Within the past twenty-five years, the difficulties in successfully growing eastern red cedar in the nursery have been largely overcome. With production of red cedar assured, its use for sandhills planting has been noticeably stepped up. Cedar has proved capable of living through dry seasons and of very high survivals on the various sites planted. For these reasons, cedar along with ponderosa pine — both species are native to this region — are today the only two conifers included in the Nebraska National Forest planting program, except where experimental planting is involved.

Planting Methods Developed.

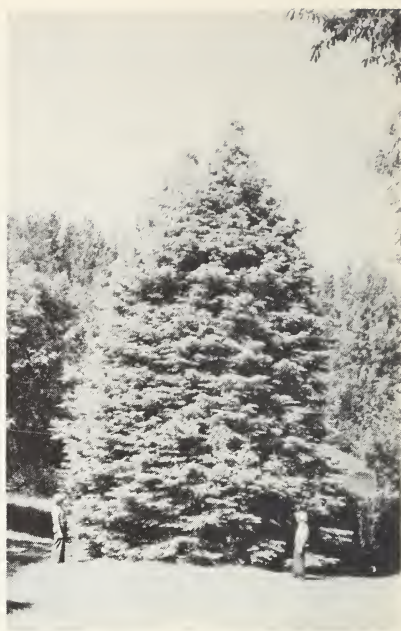
Four methods of planting have been tried successfully in the sandhills planting. These are the (1) Slit, (2) Square hole, (3) Cone, and (4) Trencher methods. In each method a furrow first is plowed to remove the grass and dry sand on the surface. The Michigan bar was introduced in 1925. It is essentially the slit method greatly improved in efficiency by the use of a specially designed bar for making the slit in place of the ordinary spade which was originally used. In the earlier plantings, the slit method was more frequently used.

The square hole and cone methods involved digging a larger hole, with a spade, in which the trees were planted. In the cone method, a cone was shaped by hand in the hole to facilitate better spreading of the roots before filling in the dirt. These two later methods were more costly, slower and were discarded for those reasons.

A specialized plow, known as a trencher, was fabricated early in the history of the planting project. The trencher drawn by four horses opens up a continuous slit ten to twelve inches deep in the bottom of a plowed furrow. The trees are held in position and the sandy walls caved in about the roots by a sharp kick with the planters



Individual specimen of Limber pine tree (*Pinus Flexilis*) planted about 1907 at Bessey Nursery.



White fir (*Abies concolor*) planted about 1907, makes an excellent ornamental tree on favorable sites.



Ponderosa pine planted in 1906. Maximum height fifty-five feet and 14 inches in diameter.

foot. The tractor with its abundance of power has finally opened the way for the development of the very efficient tree planting machines now in use on the Nebraska planting project. With these machines designed especially for operation in the sandy soils prevailing on the sandhills, an excellent planting job is being done with a minimum of manpower at a much cheaper cost than can be done in most other tree planting projects in the nation. So efficient and economical in the use of manpower is the operation of this Nebraska tree planting machine, that present day cost of planting is about \$5 per acre, which approaches, if it does not equal, the cost of similar work on other mechanized planting operations anywhere in the nation.

Spacing Practices.

More recent planting has called for a spacing of 4' x 7' in ponderosa pine and 5' x 7' in eastern red cedar plantations. There now is strong evidence, at least in the case of the red cedar, in favor of adjusting the spacing of this latter species to approximately 3' x 10' or 3' x 12'. The three foot spacing in rows 12' apart, gives each tree substantially the same root-feeding area and has the decided advantage of producing taller, straighter main trunks which will utilize the tree's substance in the main stem rather than to dissipate it in large side branches.

Planting Sites and the Job Ahead.

As early as 1909, an effort was made to work out a site-species relationship based largely on topographic features or exposures. Four sites are recognized under this scheme: 1. Ridges, 2. South Slopes, 3. Bottoms, and 4. North Slopes. Briefly the greatest planting success has been in plantations on the ridge and north slope sites or types. Results of planting on south slopes and bottom lands have not been encouraging and such sites will not be planted in the future. These south slopes and bottom types however do provide excellent forage with which to maintain a grazing resource. Strips of range land, a mile wide, extending through the plantations at intervals are closely grazed as an additional fire protection measure. By deducting these areas there remains about 33,000 acres of desirable planting sites on the Bessey Division that could be planted. On the Niobrara Division 60,000 acres of satisfactory planting sites are available for future planting.

The remaining area within the Forest will afford a substantial acreage which can be used to provide forage for cattle and wildlife. Within the tree plantations themselves, there will always be appreciable areas producing grass which may properly be used for grazing. The forage produced within the plantations, together with that in the non-plantable sites, will then always afford a substantial grazing use with its accompanying revenue.

ENEMIES OF THE PLANTATIONS

FIRE. Almost every kind of forest enemy has appeared since planting was first begun in Nebraska. Of these enemies, of course, nothing can equal fire. For the prompt and effective control of such fires as may occur, the Forest Service has developed an efficient fire control plan. It includes a steel observation tower on each of the two divisions of the FOREST. These towers are continuously manned during the seasons of serious fire danger. Supplementing the detection system, the most modern automotive equipment — 4-wheel-drive trucks, fitted with fog-pump outfits, are available to adequately handle any fires. Supplementing this mechanical equipment, a series of fire lines has been established in and around the planted areas for fire control. The reduction of inflammable material through grazing also has been an important factor in the fire control plans.

INSECTS. Next to fires, insects have been the cause of serious damage and loss of growth in the plantations. Two species of tip m o t h s (*Rhyacionia neomexicana* and *R. Frustrana bushnelli*) are active in the planted areas. The tip moth first appeared in 1909 and in the following years it increased rapidly, spreading to new plantations as fast as they were planted. The damage in the early years was greater in jack pine and to a less extent in the ponderosa pine. This situation was reversed later on, until the damage suffered by the ponderosa pine was so severe that a large percentage of the growth had been lost. At the present time, however, the damage has materially decreased with the steadily increasing height of the trees and the plantations now show less serious damage than for many years past.

An infestation of pine sawfly appeared in the late 1930s and has been effectively checked by vigorous control work.

Brown pine scale (*Toumeyella nomismaticum*) also has done serious damage in limited areas. Effective control measures have now been found for this pest.

Other species of bark beetles and forest insect enemies have put in their appearance at various times but at present they offer no serious threat to the forest plantations.

RODENTS AND BIRDS. Pocket gophers have done extensive damage in trees up to 6 to 8 feet high, usually in thinly stocked and younger plantations. Poisoning and trapping have proved to be effective control measures. Sharp-tailed prairie grouse have at times damaged small trees by eating the tender buds of the terminal shoots. Most serious damage has been done to the terminal buds in the nursery transplant beds.



Shows a 1911 Jack pine plantation thinned in 1934 and again in 1952. The trees removed are utilized for fence posts.



Mechanical bark peeling machine used in removing bark produces smooth surfaced fence posts.



Finished fence posts, piled for seasoning, will later be given preservative treatment for longer life.

DEER. Deer browsing during periods of heavy concentration of the animals, has been serious in young eastern red cedar plantations and also to Scotch and Austrian pine. Ponderosa and jack pine have suffered more from rubbing by the antlered animals than by browsing. A few individual trees have been virtually ruined by such treatment, but such damage is relatively unimportant.

PORCUPINES. Are indigenous to the sandhills. They have done an appreciable amount of damage in a few plantations. Sixty-eight of these rodents were killed in the winter of 1950-51 by forest employees in the Bessey plantations.

UTILIZATION

Foresters familiar with the Nebraska plantations concede that high quality sawtimber production cannot be expected on this project. There is, however, every reason to expect the plantations will produce appreciable quantities of fence posts, corral poles, telephone poles, lower grades of sawtimber products and other wood materials for which there is a steady demand for use on ranches and farms within a large territory adjacent to the Forest.

Recently a mechanical post-peeling machine has been installed on Bessey District which effectively removes the bark and leaves a a smooth wood surface and a neat, rounded product. Post-sized trees now are being removed from dense stands and made into fence posts. A preservative treating plant in which either creosote or pentachlorophenol can be used is available for treating forest-produced fence posts for use on the forest.

NURSERY PRACTICES DEVELOPED

The original nursery area, established near Halsey in 1902, has gradually been increased in size and output until at present there are 29 acres available for nursery seedbeds and transplant areas, with an annual production capacity of between 4 and 5 million trees. It should be stated here that this nursery pioneered the way from scratch and in so doing gradually developed the present-day nursery methods and techniques as well as a splendid array of highly specialized nursery equipment, all of which has been designed for the efficient production of high grade coniferous planting stock at the most economical cost. Like most nurseries, the various nursery methods and practices have been developed especially to fit into local needs and requirements. Foresters and nurserymen from distant places and from many foreign countries have shown keen interest, and many have adopted to their own needs the practices and some of the equipment which have been developed at Bessey Nursery.



The forested hillside shown above, planted in 1903 is located immediately south of the oldest portion of Bessey Nursery. Many of the trees exceed fifty feet in height.



Millions of young pine and eastern red cedar trees are grown in nursery beds at Bessey Nursery. Shown above are eastern red cedar transplants two years old.



Weeding operation in two-year old transplant beds with cold storage building in background for storing seedling stock.



Plantation of red pine, (*Pinus resinosa*) planted in 1910—42 years old in 1952.

TREES SHIPPED TO MANY PLACES

The trees produced at Bessey Nursery are used (1) to meet National Forest planting requirements on the Black Hills and Harney National Forests in South Dakota, from which places comes much of the ponderosa pine seed used at the nursery and for the Nebraska National Forest; (2) to supply state agencies with trees needed for distribution to farmers for windbreak, shelterbelt and woodlot planting under the provisions of Section 4 of the Clarke-McNary Act; (3) also to supply other cooperating federal and state agencies with trees for erosion control, wildlife and recreation areas.

Nebraska has long been known as the Tree Planters State. By the time the Nebraska Forest was established, the original tree planting enthusiasm had largely subsided. The development of the forest plantations noticeably revived the interest in tree planting. In 1911 Congressman Moses P. Kinkaid inserted a provision in the Department of Agriculture appropriation bill which permitted the free distribution of trees from Bessey Nursery in limited quantities to farmers within the western half of Nebraska. Nearly 2½ millions of trees were distributed under that authority. That arrangement was the forerunner of the Clark-McNary Law, Section 4 of which provided for financial cooperation by the Federal government with State Forestry agencies in the production and distribution of trees for the planting of farm woodlots, windbreaks and shelterbelts. Under this cooperative arrangement, the Extension Forester in Nebraska has been distributing both hardwoods and conifers since 1926 to thousands of farmers. The total numbers of trees distributed to date under the Clarke-McNary Act in Nebraska is in excess of 15,000,000 hardwoods and nearly 12,000,000 conifers. Ponderosa, jack, Scotch and Austrian pine and eastern red cedar are produced on a quantity basis at the Bessey Nursery. Red cedar is the most popular. Trees planted as a result of this Act have been valuable in providing shelter to farmsteads and to livestock, as evidenced during the blizzards of January 1949.

The planting stock distributed from Bessey Nursery in the spring of 1952 was as follows:

For National Forest planting.....	1,117,000
To Extension Forester, State of Nebraska for Clarke-McNary cooperative tree distribution to farmers.....	1,013,000
To Nebraska Game Forestation and parks Commissioner (for wildlife planting)....	150,000
To all other operators — including State Forestry, other State, County, and Federal agencies.....	561,000
TOTAL OF TREES DISTRIBUTED.....	2,841,000

The demand for conifers from cooperating agencies has been steadily growing in the past few years. To the extent the nursery's capacity will permit, the Forest Service, after supplying its own needs, will continue to furnish trees to cooperators at the estimated cost of production.

About 4,132,000 trees will be available for distribution to meet National Forest and cooperator planting demands in 1953. These include:

1, 575,000 ponderosa pine	
2,165,000 eastern red cedar	
180,000 Rocky Mountain cedar	
183,000 Austrian red and jack pine	
10,000 Black Hills spruce	
19,000 Russian olive, wild plum, and Rhus trilobata	
TOTAL	4,132,000

Future production plans emphasize particularly the need for eastern red cedar and ponderosa pine as the principal output.

CATTLE GRAZING

The first grazing of the Nebraska Forest plantations was permitted in 1919, with horses. Soon dehorned cattle were permitted, and now it is the practice to allow limited grazing within plantations after they are approximately ten years of age and have reached such size that rubbing by livestock will cause little or no damage.

This has proved of great value to the plantations because of the reduction of competition from the rank growth of grass that results when there is no grazing. The reduction in fire hazard to the plantations is also important.

Grazing is a necessary complement to tree planting in the sand-hills. As stated previously, the south exposures and heavily sodded valleys, which comprise about one-third of the area, will not be planted to trees. In addition, there will always be some open places in the plantations. In fact, the plantations on the Nebraska Forest are especially valuable for winter grazing, because of the shelter provided by the forest. Cattle that were being grazed in Nebraska Forest plantations in January-February of 1949, when severe blizzards caused heavy livestock loss through much of western Nebraska, came through in good condition and without loss.

Reduction in the number and size of fires, the installation of more water plants and conservative grazing has resulted in an upward trend on the Nebraska Forest ranges which will continue to provide more beef.



Niobrara Ranger Station. Office in left foreground. Ranger's residence in right background.



A well planned farm windbreak planting of eastern red cedar for protection of ranch home in sandhill region. Photo of Ferdinand Schneidereit's ranch 14 miles northwest of Brewster, Nebraska.

An average of 12,772 head of cattle owned by 62 ranchers living adjacent to the Forest were grazed annually during the past ten years on Nebraska National Forest ranges. Receipts from the sale of National Forest resources on the Forest have averaged \$58,095 during the past five years of which the major part comes from grazing fees. Receipts totaled \$84,257.87 for the fiscal year 1952, the largest on record.

The first grazing fees were collected in 1906. The fee at that time was 35c for the full season of seven months. The average fee for grazing cattle on the Nebraska Forest in 1952 is \$6.84 for a six-months season. The returns from grazing cattle on this Forest more than cover the cost of administration and protection. It should be remembered that this Forest was not established for grazing. It was set aside for tree planting. However, utilization of range resources by grazing is essential in the management of the Forest.

WILD LIFE

Both divisions of the Nebraska National Forest are, by reason of a law enacted by the Nebraska State Legislative in 1921, State Game and Bird refugees. Over the years, as a result of protection, a herd of about 800 mule deer was built up. They began to do considerable damage to planted trees and to young trees in the nursery despite the presence of a supposedly deer-proof fence. As a result, the State Game, Reforestation and Parks Commission established an open season in November, 1945. 365 deer were harvested. There has been no open season since. At the present time, there are estimated to be about 450 deer on the Forest, which is about as many as can be supported without damage to trees.

Far greater than their value for sport is the thrill to the average citizen who chances to come upon several deer while driving through the Forest. People drive from distant places to give their children a glimpse of deer in the Nebraska Forest.

In 1911 and 1912, John Zimmer of the University of Nebraska made a bird census of the Bessey Division of the Forest, including the adjacent river valley. He reports in his bulletin "The Birds of the Thomas County Forest Reserve" that he found 145 species and sub-species.

Carl Smith, an employee of the Forest Service at the Bessey Nursery, who is an ornithologist, listed about 200 species in the same territory during the past year and says that about 100 species nest on the Forest. Smith reports that the western wood thrush and scarlet tanager are found more commonly here than anywhere in the surrounding territory within a radius of fifty miles. The lark sparrow is the most common species on the Forest.



The Bessey Nursery picnic ground, a most popular recreation area, is used by thousands of visitors each year.



An excellent modern swimming pool is available for adults. Youngsters settle for this wading pond.

This increase in bird population is largely the result of the establishment of forest conditions. It may eventually have some effect in keeping the natural insect pests of the Forest under control. Certainly this has made the Forest a wonderful place for study and observation for the ornithologist as well as the amateur bird lover.

RECREATION

An increasing number of persons drive through the Bessey Nursery and the Nebraska Forest plantations. They climb to the top of Scott Lookout Tower, which is located on top of one of the highest points on the Bessey Division, and are thrilled by the sight of thousands of acres of planted trees that stretch out in every direction.

There were 32,000 such visitors in 1951. Of that number, about half picnicked at the beautiful recreational area near the entrance to the Bessey Nursery. About 3,800 enjoyed a plunge in the swimming pool here without any cost. The upkeep and life guard for the pool is provided by the Blaine and Thomas County Conservation and Recreation Club. This represents a fine cooperative and community spirit and is characteristic of the attitude of many citizens who live in the vicinity of the Forest.

The recreational value of Nebraska Forest to the people of the surrounding region is evident on any summer day, especially when the mercury on the thermometer is hovering near the century mark. Then, on weekends one will find group picnics representing farm organizations, 4H clubs, churches, lodges, the American Legion — in fact, as many as 2,000 persons have attended a single day's event. The service that this Forest furnishes to the adjacent communities is something that cannot be measured in dollars and cents. It is one of the intangibles that makes the Forest an institution, serving an ever-increasing number of people.

NO SMOKING ON FOREST

Because of the highly inflammable ground cover on the Nebraska National Forest and in accordance with the authority vested in me under Regulation T-1 of the National Forest Manual, I hereby announce that smoking is prohibited within the exterior boundries of the Nebraska National Forest (both the Niobrara and Bessey Divisions included), except that this order shall not apply at improved places of habitation or at permanently established camps where houses or tents are provided.

DONALD E. CLARK
Regional Forester.

COMMENTS OF "OLD TIMERS"

Charles A. Scott, the first Supervisor of the Forest, made these observations on the project recently. "One of the most remarkable things relating to the Nebraska Sand Hill Tree Planting Project, in my opinion, is the change in public sentiment regarding planting trees throughout the mid-west states. In 1902 when this project was being developed, the public in general considered it foolish and anyone who believed trees would grow in the sandhills was thought to be mistaken. Their convictions were based on the fact that the timber claim plantings of the preceding generation were, with few exceptions, complete failures. Scientific growing and planting of trees was unknown in the United States 50 years ago.

"The development of this project has brought about a public consciousness of the value of tree planting. At that time there were but 3 or 4 Schools of Forestry in the United States. Today practically every Agricultural College in the United States has an extension forester on its staff in answer to public demand for information pertaining to care and growing of trees.

"The success of this Project aroused nation-wide interest in tree planting. The Clark-McNary Act was a natural consequence. Now millions of trees are planted annually.

The Shelterbelt plantings of the droughty "thirties" was inspired by the success of the Halsey Sandhill plantings. This was one of the most commendable projects attempted by the Forest Service. It was highly successful during its lifetime, but met an untimely death at the hands of political opposition.

"The success of the shelterbelt plantings has extended its influence beyond the bounds of the United States. Within recent months the Republic of Mexico has appropriated money to be spent for Shelterbelt plantings on one of the new irrigation projects in the Lower Rio Grand River Valley, to protect the sandy soil from wind erosion. "I am satisfied that the Mexican government got its idea of shelterbelt plantings from the results of such plantings in the United States.

"The people of the United States are today a tree-planting-conscious people. They realize the value of the right tree in its proper location. If you want to know the value of a tree in your yard, give it care, watch it grow for five years or longer, then ask yourself what amount you would be willing to sell it for. You will be surprised how rapidly trees grow in value."

John D. Guthrie, prominent in the development of forestry in the United States, made the following statement after he had inspected the work of the CCC Camp at the Bessey Nursery in 1935. "This was my first visit to the now famous Nebraska tree-planting experiment and I was tremendously impressed. This man-made forest should be visited by every American forester; it should serve as a real show window of forestry."

The late Honorable George W. Norris, U. S. Senator from Nebraska, visited the Nebraska Forest on October 19 and 20, 1938. The Senator was enthusiastic about the growth that some of the larger trees had made in the plantations and said that tree planting should have its place in the sandhills along with stock raising.

CONCLUSIONS

Fifty years have justified the ideas and objectives of the foresighted individuals who were responsible for the establishment of the Nebraska National Forest. The tree plantings on the then almost barren sandhills of this project are, to a considerable extent, responsible for the stimulation of shelterbelt and windbreak planting of the past 25 years in the Great Plains Region. Many thousands of trees are produced at the Bessey Nursery each year for farms and ranches under the Clarke-McNary Act.

Although this Forest has not and will not contribute in a major way to the nation's supply of timber, it has already been demonstrated that such plantations can supply a considerable portion of the fence post needs of Nebraska's farms and ranches. In fact, eastern red cedar will yield a return of \$3.00 an acre annually if grown on a 50-year fence post rotation.

The chief value of the Forest to the State and the Nation is that it has been the inspiration for a lot of tree planting on farms and ranches. It is serving as an arboretum of great value for central and western Nebraska. Dozens of trees and shrubs have been planted in plantations and in the arboretum around the nursery and these serve as a demonstration to the public. A natural area of 750 acres, which will not be grazed, has been established on the Forest to preserve the natural fauna and vegetation peculiar to the sandhills. This will be available for scientific study for future generations.

The grazing lands of the Forest are serving as a testing ground of determine the best sandhill range management practices. These practices, worked out in cooperation with the University of Nebraska, can be applied to private range lands on approximately one-fourth of the total area of the state.

On a practical basis, the receipts from grazing and other Forest resources greatly exceed the cost of administration and protection. The sale of trees to cooperating federal and state agencies meets its proportionate share of the cost of operating the nursery. In addition, the three counties in which the Forest is located receive 25% of the total receipts for schools and roads in lieu of taxes. This amounts to eight or ten cents an acre for government-owned land within the Forest boundaries. This compares very favorably with the taxes that the counties collect from similar sandhill grazing land. In accordance with another Congressional Act, 10% of the receipts are used for building and maintaining roads within the Forest.

However, to the ordinary citizen the educational and inspirational values of this area surpass the economic. It is a place where the forester, the botanist, the ecologist, the biologist, the agronomist, the ornithologist, and scientists in many lines, as well as the practical businessman and farmer, can study the effects of the establishment of a forest in a virtually treeless region and observe the changes in vegetation, bird, and animal life. And that is why an ever-increasing number of people visit the Forest for a days picnic and for the inspiration and education it provides. The Nebraska Forest is an economic, aesthetic, recreational and inspirational asset to the citizens of Nebraska and adjacent states.

CHRONOLOGICAL HISTORY OF THE NEBRASKA FOREST

- 1901 — July 1 to October 1. Reconnaissance of western Nebraska to determine the advisability of starting a forest-planting project.
- 1902 — April 16. Dismal River and Niobrara Forest Reserves established by proclamation of President Theodore Roosevelt.
- 1902 — July. Ground broken for Halsey Nursery. Boundaries of two divisions surveyed and posted.
- 1902 — September to November. Seed collected in the Pine Ridge of Nebraska, in the Black Hills and in northern New Mexico. First seed beds sowed at nursery.
- 1902 — December 23. First building completed on site now occupied by Supervisor's headquarters and forest officers moved in from summer tents.
- 1903 — First forest plantations established. Mess-hall and barn erected.
- 1904
& — Experimental planting continued.
- 1905
- 1906 — First transplanting in nursery. Cement block building, used as Supervisor's headquarters and residence for many years, was built.

- 1906 — North Platte Forest Reserve, located in Grant and Arthur Counties, Nebraska, established March 10.
- 1907 — Name of "forest reserves" changed to "national forests."
- 1910 — March. Grass fire that started 65 miles west of Forest burned several hundred acres of partly stocked plantations. Trencher system of tree planting first used on a large scale.
- 1912 — Free distribution of trees to residents of the 6th Congressional District of Nebraska started as a result of legislation introduced by Congressman Moses P. Kinkaid. This continued through the spring of 1927.
- 1913 — March 1. North Platte division eliminated from Forest and opened to homesteading.
- 1914 — Morton Nursery established on 80 acres of land purchased along Niobrara River to raise trees for planting on Niobrara Division.
- 1915 — September 3. The Names — Dismal River Division and Halsey Nursery changed to Bessey Division and Nursery in honor of Dr. Chas. E. Bessey.
- 1917 — Nursery production reduced account World War I.
- 1919 — Exchange of State of Nebraska school land — 8960 acres within Forest boundary — made for equal area of National Forest land.
- 1925 — Morton Nursery abandoned — all tree production was concentrated at Bessey Nursery, which was enlarged.
- 1926 — Bessey Nursery started to supply trees to Nebraska and adjacent states for distribution under the Clarke-McNary Act. Dr. R. J. Pool of the University of Nebraska, started first plots on forage and range studies.
- 1927 — June 4 and 5. Twenty-fifth anniversary of the Nebraska National Forest held at Bessey Nursery with many prominent Federal, state and University officials present.
- 1929 — Tract of approximately 78 acres east of the original "Nursery Eighty" was purchased under Congressional authorization from George Campau and developed as Block V of Bessey Nursery. First thinnings in densely growing plantations were made by six rangers detailed to the Forest for the winter.
- 1930 — Present Supervisor's headquarters building erected on site of original building which was torn down.
- 1931 — Free administrative use permits issued to settlers to prune and thin crowded plantations. Material given to permittees for removal.

- 1933 — First CCC (Civilian Conservation corps) work started from side camps of other CCC projects.
U. S. Prairie States Forestry Project started by President Franklin D. Roosevelt. Nursery and plantations furnished much basic information and trees.
- 1934 — Establishment of the first full CCC camp on Bessey District.. Extensive thinning and pruning of older plantations undertaken as a winter work project.
- 1935 — System of sand clay roads built to replace the characteristic "hay roads" of the sandhills. Primary roads now extend to
1940 from Forest headquarters through plantations to Dismal River and to west boundary of Bessey Division and from Niobrara River to southwest boundry on Niobrara Division.
- 1935 — Vast improvement program completed by the CCC, including shelter house and swimming pool at Bessey Nursery
1940 picnic ground, two 45,000 gallon reservoirs, two miles of game proof fence built around nursery, seed extractory, garages and shop, cold storage building for trees.
- 1938 — New residence completed for ranger on Niobrara Division and name changed from Lookout to Niobrara Ranger Station.
- 1941 — New residence completed for Supervisor, and cement block headquarters for 35 years was razed.
- 1942 — Retrenchment started in planting program account of World War II.
- 1945 — Administration of the Forest was placed under the direction to
1947 of the Supervisor of the Harney Forest, Custer, South Dakota, as an economy and war measure.
- 1945 — First big game hunt on Forest.
- 1948 — Administration of the forest was returned to local forester-in-charge.
- 1948 — Firefighting equipment on Forest modernized and Forest officers assisted local communities — Thedford, Dunning, Purdum and Brewster — in organization and procurement of fire equipment.
- 1949 — U. S. Senator Hugh Butler attended the annual picnic and visitors' day at the Forest headquarters and was enthusiastic in his approval of the project.
- 1949 — Forest Service men and equipment performed effective emergency relief work in Thomas, Blaine and Cherry Counties during severe blizzard of January — February. Forest awarded citation and bronze plaque as a result from the Secretary of Agriculture for meritorious service under severe conditions.

PERSONNEL — NEBRASKA FOREST

1901

Wm. L. Hall — In charge of reconnaissance. R. S. Kellogg, Chief of Party, L. C. Miller*, Hugh P. Baker, F. G. Miller*, E. P. Bailey*, John H. Hatton*, Charles A. Scott.

1902 — 1903

L. C. Miller* — In charge of boundary survey. C. A. Scott, W. I. Hutchinson, W. H. Mast, J. C. Blumer, H. D. Scudder, R. V. Reynolds*.

C. A. Scott — In charge of nursery work, 1902 — 1907. W. H. Mast, H. R. Shockley*, Assistants; Fred Besley, E. H. Frothingham, E. O. Sicke, H. O. Stabler, Bridges and Drake, detailed to project at various times; E. J. S. Moore, Chief of Party, Krauter, H. O. Stabler, A. S. Peck, H. B. Holroyd, Thomas Swan, on boundry survey, Niobrara Division.

1904 — 1907

C. A. Scott, Forest Supervisor; H. R. Shockley*, Deputy Supervisor; W. H. Mast, E. A. Sterling, Samuel Spring*, Jas W. Toumey*, E. E. Carter, Forest Inspectors.

ROSTER OF OTHER FOREST OFFICERS — 1901 to 1952

Forest Supervisors

W. H. Mast	1908 — 1910
H. R. Shockley*	1910 — 1912
H. Earl French*	1912 — 1913
Fred R. Johnson	1913 — 1916
Jay Higgins	1916 — 1929
A. L. Nelson	1929 — 1934
C. L. Van Giesen	1934 — 1935
V. J. Dayharsh	1935 — 1943
Ralph R. Hill	1943 — 1945
Marion Webber	1945 — 1947
Russel K. Smith	1947 to date

(Forester-in-Charge)

Planting and Technical Assistants

Wm. H. Mast	1901 — 1908
L. Besley	1903 — 1910
C. R. Beechtele	1903 — 1910
Roy G. Pierce	1908 — 1912
Fred R. Johnson	1912 — 1913
Theo. Krueger*	1912 — 1917
Russell K. Smith	1936 — 1937

Forest Rangers

J. G. Lord	1907 — 1944
Asa W. Stuckey	1908 — 1912
C. E. White	1908 — 1913
N. J. Wirz	1915 — 1923
Geo. E. Belknap	1916 — 1917
Karl L. Janouch	1918 — 1926
John Lubbe	1921 — 1925
Marion Hulse	1926 — 1929
Roland R. Rotty	1929 — 1939
Fred Newcomer	1934 — 1939
Donald W. Smith	1939 — 1942
Charles W. Stavely	1944 to date

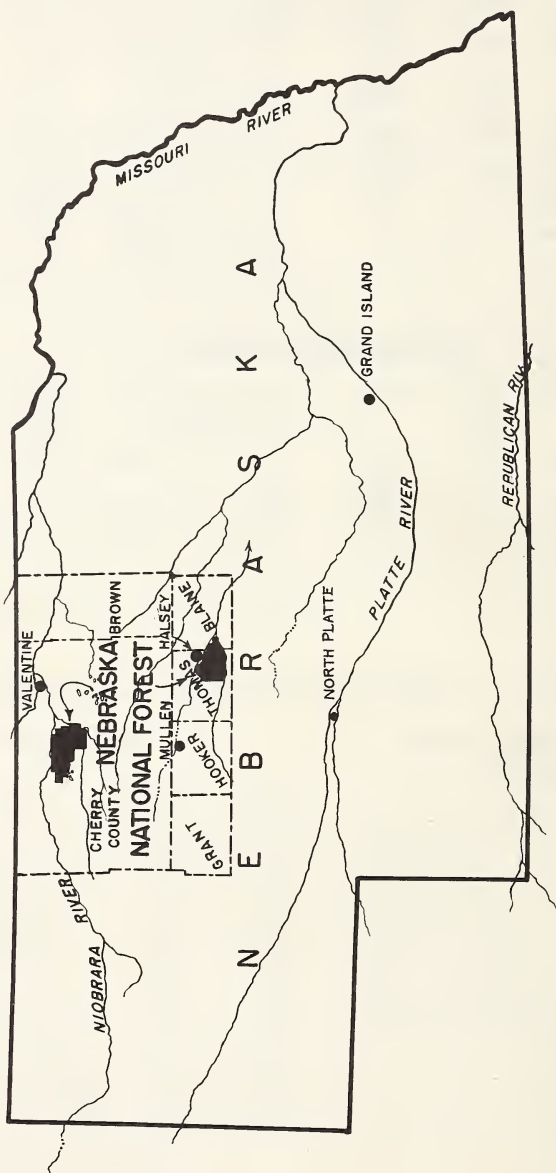
Nurserymen

H. B. Hulse	1912 — 1913
Joseph A. Sweeney	1915 — 1922
Karl L. Janouch	1917 — 1918
Harry C. Turner*	1918 — 1924
Wm. C. Buckner*	1926 — 1930
William B. Apgar	1930 — 1931
V. J. Dayharsh	1931 — 1935
Philip Heaton	1930 — 1941
Donald J. Hodges	1938 — 1942
B. J. Abrahams	1941 — 1942
M. F. Brandborg	1942 — 1947
John-S. Maslack	1945 — 1951
Donald Oliver	1951 to date

Administrative Assistants

Charles B. Pool	1913 — 1917	H. C. Maaske	1926 — 1929
John Lubbe	1918 —	R. M. Sweet	1931 — 1934
J. P. Nordlund	1918 — 1919	Cedric A. Nater	1934 — 1943
Ralph W. Gray	1920 — 1922	Wm. A. Campbell	1948 — 1950
Wm. B. Ihlanfeldt	1922 — 1923	Lynn H. Struble	1950 to date

* *Deceased*



HELP PREVENT FIRES

